REMARKS

The pending claims are 1-34. Applicant has amended claims 4, 5, 9, 10, 13, 24-26 and 30, and introduced new claims 35-51. Support for new claims 35-51 is found in the specification as follows: original claims 26 and 30, paragraphs [0020], [0021], [0028], [0032], [0033], [0037], [0042], [0050] and [0071]. No new matter has been added.

Claims 7, 9 and 11-18 are objected to as being dependent upon a rejected base claim, but are indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Because Applicant believes that the base claims are allowable, Applicant will defer action on claims 7, 9 and 11-18.

I. REJECTIONS UNDER SECTION 112, SECOND PARAGRAPH

Claims 8 and 30 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as his invention.

Applicant traverses the Examiner's rejection of Claim 8. The phrase "the step of controlling" does not lack antecedent basis in Claim 1. Claim 1 recites "A method of delivering a substance to the nasal airway of a subject comprising the steps of: ..." and goes on to recite a series of steps. Claim 8 further limits claim 1 by adding the additional step of "controlling the flow rate of the gas flow delivered by the supply unit." Applicant respectfully asks the Examiner to reconsider and withdraw the rejection of claim 8.

Applicant has obviated the Examiner's rejection of claim 30 by amending the claim to omit the phrase "particularly rhinitis." This subject matter is now defined in new claim 35.

II. REJECTIONS UNDER 35 U.S.C. § 102(b)

A. Keldmann et al., WO 98/53869

Claims 1-3, 10, 21, 26 and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Keldmann *et al.* WO 98/53869 (hereinafter "Keldmann") as evidenced by Grossan US Patent 3,847,145 (hereinafter "Grossan"). For the reasons provided below, Applicant respectfully requests that the Examiner reconsider and withdraw this ground for rejection.

With respect to independent Claim 1, the Examiner alleges that Keldmann expressly discloses all of the limitations of Applicant's Claim 1 with the exception of the last limitation: "delivering a gas flow entraining a substance through the outlet at such a driving pressure as to flow around the posterior margin of the nasal septum and out of the other nostril of the subject." The Examiner asserts that this last limitation is inherent, as evidenced by Grossan:

> "It would be inherent that if one nostril is sealed and is receiving gas flow, and the oropharyngeal velum is closed, [then] the only [way] for the gas flow to escape is around the posterior margin of the nasal septum and out of the other nostril of the subject as evidenced by Grossan."[1]

The Examiner's argument is unsupportable for at least two reasons. First, as detailed below, Keldmann fails to teach the first limitation of claim 1 pertaining to "sealing one of the nostrils" of the subject. Secondly, bi-directional delivery is not inherently disclosed by Keldmann based on Grossan.

1. Keldmann Fails to Teach the Sealing Step of Applicant's Claim 1

The Keldmann disclosure is completely devoid of any teaching or suggestion of a method for delivering a substance to the nasal airway of a subject, comprising the step of "sealing one of the nostrils of a subject to an outlet of a delivery unit such as to prevent the escape of a gas flow through the one nostril." Keldmann relates to "a method for

[1] Office Action at page 3.

introducing a powdered or particulate substance into a persons nostril or nostrils" (WO 98/53869, page 1, lines 3-5). The method is further described as follows:

> "The present invention provides such a method for introducing a powdered or particulate substance into a persons nostril or nostrils, said method comprising arranging a dose of the substance within an inner cavity of a tubular body, inserting a first open end of the tubular body communicating with the inner cavity between the persons lips, inserting a second open end of the tubular body communicating with the inner cavity into said nostril, and blowing into the first open end of the tubular body so as to create a flow of air through the inner cavity of the tubular body for transferring the substance to the nostril." (*Id.* at page 1, lines 9-19) (Emphasis added)

The foregoing passage describes the nosepiece as being inserted into a nostril. No mention is made of a sealing nosepiece, or even the desirability of sealing one of the nostrils of the subject to the nosepiece so as to prevent the escape of a gas flow through the one nostril.

In the Office Action, the Examiner asserts that Keldmann's Fig. 1 shows a "sealed nostril" (Office Action, page 4). Applicant respectfully submits that when Fig. 1 is construed in context with the rest of the Keldmann specification (which makes no mention whatsoever of a seal), as well as basic knowledge of human anatomy, the Examiner should conclude that the rudimentary lateral section of Fig. 1 cannot properly be construed to disclose a sealed nostril.

According to Keldmann, the device shown in Fig. 1 is a tubular body and comprises "a nasal piece 12 to be inserted into a nostril of the user" (page 9, lines 26-33).[2] Keldmann further discloses that when the device of Fig. 1 is in use, "the user blows through the mouthpiece ... whereby the powdered substance ... is dispersed in the air flowing through the tubular device and is transferred to the nostril" (page 10, lines 13-16). No mention is made of a sealing nosepiece. Moreover, powdered substance could be delivered to the nostril in the absence of a sealing nosepiece. Thus, there is nothing in

[2] See also page 10, lines 11-13 (the nasal piece is inserted "into a nostril of the user ... as shown in Fig. 1").

the Keldmann specification to support the interpretation of Fig. 1 as illustrating a sealed nostril.

It is important to recognize that Fig. 1 merely represents a rudimentary (schematic) lateral section. In actuality, human nostrils are three-dimensional, are generally pear-shaped or oval-shaped, and open into larger anterior nasal cavities to which a tubular body as disclosed by Keldmann would not achieve a seal. It is submitted that a person of ordinary skill in the art would understand that Keldmann's Fig. 1 is nothing more than a schematic representation of a tubular member inserted into a nostril. If Keldmann had intended Fig. 1 to illustrate a sealed nostril, one would have expected Keldmann to make some mention in the description of a seal, and in addition provide details regarding the shape and outer diameter of the nosepiece required to provide a sealing fit in the three-dimensional human nostril. Such details are not inherent in Fig. 1, nor are they provided anywhere in the Keldmann specification. In contrast, Applicant's specification provides, for example, that "the nosepiece is configured to extend about 1 cm into the one nasal cavity so as to expand the valve region, a region located about 2 to 3 cm within a nasal cavity which is usually the flow limiting region" (paragraph [0039]); "the nosepiece may include a tight fitting nasal olive, which can aid the creation of a suitable physiological gas flow" (paragraph [0041]); and "in a preferred embodiment the nosepiece ... can include an external olive or be shaped to cause the anterior region of the nasal cavity into which the nosepiece ... is inserted to be enlarged" (paragraph [0089]).

Applicant was the first to recognize the importance of a sealing nosepiece and bi-directional delivery ("the tight seal between the nosepiece and the one nostril ensures a prolonged penetration of the complex nasal airway, a bidirectional gas flow through the nasal cavities and deposition of the substance in the contralateral nasal passage").[3] It is impermissible hindsight to read Applicant's invention into the disclosure of Keldmann.

[3] US 2004/0182388, paragraph [0061].

In the Examiner's "Reasons for Allowance" of Applicant's parent application 09/700,532, the Examiner recognized that "the prior art of record [including, but not limited to, Keldmann] fails to teach or render obvious the overall claimed invention of a nasal delivery device for delivering a substance to the nasal airway of a subject, comprising: a closure unit for causing the closure of the oropharyngeal velum of the subject; and a delivery unit wherein the delivery unit comprises a nose piece which includes an outlet and a sealing member for providing a fluid tight seal between the outlet and one nostril." (Emphasis added) The same distinction applies to Applicant's method Claim 1 in the subject application.

Indeed, the International Preliminary Examination Report on the PCT application (from which this application derives) recognized that the foregoing two features of Applicant's invention render it patentable over Keldmann (see IPER for PCT/IB00/00273 at Section V, paragraphs 2, 2.1, 3 and 3.1).

For all of these reasons, the Examiner should find that Keldmann does not disclose a method of delivering a substance to the nasal airway of a subject, comprising the step of "sealing one of the nostrils of a subject to an outlet of a delivery unit such as to prevent the escape of a gas flow through the one nostril."

2. Keldmann and Grossan Do Not Inherently Disclose the Bidirectional Delivery Limitation of Applicant's Claim 1

The Examiner recognizes that Keldmann does not expressly disclose a delivery device or method that provides for the delivered gas flow to pass through one nostril, around the posterior margin of the nasal septum, and out of the other nostril (bidirectional delivery). However, the Examiner would find this limitation inherently disclosed in Keldmann based on the teachings of Grossan.

The Examiner's position is premised on there being a sealing nosepiece disclosed in Keldmann:

> "It would be inherent that if one nostril is sealed and is receiving gas flow, and the oropharyngeal velum is closed, [then] the only [way] for the gas

> flow to escape is around the posterior margin of the nasal septum and out of the other nostril of the subject as evidenced by Grossan." (Emphasis added)[4]

However, as demonstrated above, Keldmann does not disclose a sealing nosepiece.

Moreover, Grossan does not support the proposition that bidirectional delivery would inherently result from use of the Keldmann device according to the teachings of Keldmann's disclosure. The Keldmann device is used in a normal, upright position (see Figs. 1-3, 5-8, 10 and 11). In contrast, the Grossan device is meant to be used while the patient's head "is positioned generally horizontally, face down" (Grossan, column 1, lines 9-13), in order to establish a gravitational flow of the irrigating liquid through the other nasal cavity.[5] In this "bowing" position, the floor of the nose will be in a vertical position. When water is pumped or pulsed into one nostril through a sealing nosepiece it will first fill up the one nostril. When the water surface reaches the level of the posterior margin of the nasal septum, the water will, by force of gravity, start to flow down and out of the other nasal cavity or out of the mouth. This is not the same mode of action taught by Keldmann, wherein the device is used while the patient's head is in a normal, upright position, and gravity is not employed to aid the flow. In the upright position, the floor of the nose will be in a horizontal position. Thus, a bidirectional flow is not inherent in the disclosure of Keldmann as evidenced by Grossan.

Furthermore, contrary to the claimed invention, Grossan does not disclose or suggest a bidirectional flow in the presence of a closed velum. Grossan teaches that the liquid may exit from both the open nostril and the mouth (see, for example, column 3, lines 15-20). For flow to occur through the mouth, the oropharyngeal velum must be open. This also explains the requirement for the user's face to be oriented in a generally horizontal position so that the irrigating liquid is preferentially directed through the open

---

[4] Office Action at page 3.

[5] See also column 2, lines 33-35 (the patient's body is bent so that his head ... is substantially horizontal, face down, over a conventional lavatory"); column 3, lines 13-15 ("he guides the tapered portion of fitting 50 into his left nostril while he is bent over with his face substantially horizontal"); and FIG. 1.

nostril, rather than through the nasopharynx and into the mouth (see column 1, lines 44-47).

In summary, Grossan does not teach or suggest that a fluid communication can be achieved around the posterior margin of the nasal septum when the oropharyngeal velum is closed. Thus, contrary to the Examiner's assertion, Grossan cannot be utilized to evidence the inherency of bidirectional delivery in Keldmann.

B. Seidel, US Patent 746,749

Claims 1-3, 5, 6, 21-23 and 26-29 stand rejected under 35 U.S.C. 102(b) as being anticipated by Seidel US Patent 746,749. For the reasons provided below, Applicant respectfully requests that the Examiner reconsider and withdraw this ground for rejection.

As with the previous rejection based on Keldmann, the Examiner alleges that Seidel teaches all of the limitations of Applicant's independent claim 1 with the exception of the last limitation: "delivering a gas flow entraining a substance through the outlet at such a driving pressure as to flow around the posterior margin of the nasal septum and out of the other nostril of the subject." The Examiner asserts that this last limitation is inherent, as evidenced by Grossan.

The Examiner's argument is unsupportable for the following reasons. First, Seidel fails to disclose the first limitation of Applicant's claim 1 pertaining to "sealing one of the nostrils" of the subject, as well as the second limitation pertaining to "closing the oropharyngeal velum." Furthermore, even if Seidel did, as the Examiner asserts, teach all but the last limitation of claim 1, that limitation is not inherent based on Grossan for the reasons provided above in relation to Keldmann.

1. Seidel Fails to Teach the Sealing Step of Applicant's Claim 1

Seidel does not disclose or even suggest the "sealing of one of the nostrils of a subject to an outlet of a delivery unit such as to prevent the escape of a gas flow through the one nostril." The Seidel nosepiece is described as being "adapted for insertion in the nostrils of the patient" (page 1, lines 91-93) and "the point D is then placed to or in one of

the nostrils of the nose B" (page 2, lines 20-21). No mention is made of a sealing nosepiece, or even the desirability of sealing one of the nostrils of the subject to the nosepiece so as to prevent the escape of a gas flow through the one nostril. Importantly, upon inspection of Fig. 1, one observes that the outside diameter of the nosepiece is distinctly smaller than the inside diameter of the nostril. Thus, the nosepiece does not provide a seal with the nostril.

2. Seidel Fails to Teach the Velum Closure Step of Applicant's Claim 1

The Examiner points to Seidel, page 2, lines 22-34 for the proposition that Seidel teaches the method of Applicant's Claim 1 "wherein the velum closure step is provided by exhalation by the subject" (Office Action, page 5). This passage provides as follows:

> "The point D is then placed to or in one of the nostrils of the nose B, and the mouthpiece I is placed between the lips of the mouth A, and the air is then exhaled from the lungs through the opening in the mouthpiece I, the flexible tube H, the fitting G into the interior of the receptacle C, where the air becomes charged with the medicament in its passage therethrough and is forced through the nostril and the meatuses to the pituitary or mucous membrane, where the medicament is desired to be effective and which by the ordinary method of inhaling the medicated air would pass beyond said parts and enter the lungs of the patient."

While this passage describes exhalation by the subject and delivery of the medicament charged exhalation flow through the nostril and the meatuses to the pituitary or mucous membrane, the passage does not expressly state that the oropharyngeal velum of the subject is closed upon exhalation.

Furthermore, when the above passage is read in context with the rest of the disclosure, there is no reason to believe that Seidel recognized or intended velum closure to occur. Fig. 3 is described as an alternative embodiment "on the order of a medicinal insufflator or atomizer" (page 2, lines 35-37). This alternative embodiment does not function by way of the subject's exhalation air flow; rather "air may be pumped into the receptacle C by alternately contacting and releasing the ball O, drawing the air in through the valve N, and forcing it through the medicament and thence into the nostrils" (page 2,

lines 48-52). Importantly, Seidel states that this insufflator device provides another method to achieve the same result as previously described in relation to the exhalation device (page 2, lines 53-54); and yet with the insufflator device there is no exhalation air flow and hence, no possibility of velum closure. Thus, Seidel teaches a method for placing a medicament on the pituitary or mucous membrane by utilizing a delivery means other than inhalation, which would result in the medicament being inhaled down the throat and potentially into the lungs. Seidel does not teach or suggest Applicant's method of delivering a substance to the nasal airway of a subject, which utilizes a sealing nosepiece and velum closure to achieve bidirectional delivery.

3. Seidel and Grossan Do Not Inherently Disclose the Bidirectional Delivery Limitation of Applicant's Claim 1

The Examiner recognizes that Seidel does not expressly disclose a delivery device or method that provides for the delivered gas flow to pass through one nostril, around the posterior margin of the nasal septum, and out of the other nostril (bidirectional delivery). However, the Examiner is asserting that this limitation is inherently disclosed in Seidel based on the teachings of Grossan. The Examiner's rationale for the inherency theory is based on his conclusion that Seidel discloses both a sealing nosepiece and velum closure. For the reasons provided above, Applicant respectfully submits that Seidel does not disclose either a sealing nosepiece or velum closure; and, for the reasons provided in Section II(A)(2), Seidel together with Grossan do not provide a disclosure of bidirectional delivery.

III. REJECTIONS UNDER 35 U.S.C. § 103(a)

Claims 3, 19, 20, 24, 25 and 31-34 stand rejected under 35 U.S.C. 103(a) as being unpatentable over various combinations of Keldmann, Seidel and Butler et al. US 5,937,852. Applicant submits that these claims are dependent upon an allowable base claim, and thus themselves are allowable.

III. CONCLUSION

The pending claims 1-51 are in condition for allowance. If the Examiner has any questions or concerns, the Examiner is invited to call Applicant's attorney directly at (212) 969-3385.

Respectfully submitted,

PROSKAUER ROSE LLP

Date: March 30, 2007

Kristin H. Neuman
Reg. No. 35,530
Attorney for the Applicant

Proskauer Rose LLP
Patent Department
1585 Broadway
New York, NY 10036-8299
kneuman@proskauer.com
Tel. No.: (212) 969-3385
Fax No.: (212) 969-2900